Avid Xpress® DV

User's Guide Supplement

make manage move | media™

Avid®

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Using This Supplement

The appendixes in this document contain reference material that supplements the information provided in the *Avid Xpress DV User's Guide*. You should consult the *Avid Xpress DV Release Notes* for any late-breaking information that might apply to your system.

Who Should Use This Supplement

This supplement is intended for all Avid Xpress DV users, from beginning to advanced. You should be familiar with the Windows® XP operating system or Mac® OS X.

About This Guide

The Contents lists all topics included in the book. They are presented with the following overall structure:

- "Using AudioSuite Plug-Ins" lists the supported AudioSuite™ plug-ins and describes the core AudioSuite plug-ins.
- "File Format Specifications" describes the file format specifications.
- "Avid Log Specifications" describes the Avid log specifications.
- A detailed "Index" helps you quickly locate specific topics.

Symbols and Conventions

Unless noted otherwise, the material in this document applies to the Windows XP and Mac OS X operating systems. When the text applies to a specific operating system, it is marked as follows:

- (Windows) or (Windows only) means the information applies to the Windows XP operating system.
- (Macintosh) or (Macintosh only) means the information applies to the Mac OS X operating system.

The majority of screen shots in this document were captured on a Windows XP system, but the information applies to both Windows XP and Mac OS X systems. Where differences exist, both Windows XP and Mac OS X screen shots are shown.

The Avid Xpress DV documentation uses the following special symbols and conventions:

1. Numbered lists, when the order of the items is important.
    a. Alphabetical lists, when the order of secondary items is important.
- Bulleted lists, when the order of the items is unimportant.
    - Indented dashed lists, when the order of secondary items is unimportant.
- ▶ One arrow indicates a single-step procedure. Multiple arrows in a list indicate that you perform one of the actions listed.

The ⌘ symbol refers to the Apple or Command key. Press and hold the Command key and another key to perform a keyboard shortcut.

`Courier Bold` font identifies text that you type.

Look here in the margin for tips.

In the margin, you will find tips that help you perform tasks more easily and efficiently.

A note provides important related information, reminders, recommendations, and strong suggestions.

A caution means that a specific action you take could cause harm to your computer or cause you to lose data.

If You Need Help

If you are having trouble using Avid Xpress DV, you should:

1. Retry the action, carefully following the instructions given for that task in this guide. It is especially important to check each step of your workflow.
2. Check the release notes supplied with your Avid application for the latest information that might have become available *after* the hardcopy documentation was printed.
3. Check the documentation that came with your Avid application or your hardware for maintenance or hardware-related issues.
4. Visit the online Knowledge Center at www.avid.com/support. Online services are available 24 hours per day, 7 days per week. Search this online Knowledge Center to find answers, to view error messages, to access troubleshooting tips, to download updates, and to read/join online message-board discussions.
5. For Technical Support, please call 800-800-AVID (800-800-2843).

   For Broadcast On-Air Sites and Call Letter Stations, call 800-NEWSDNG (800-639-7364).

Related Information

The following documents provide more information about the Avid Xpress DV product:

- *Avid Xpress DV Release Notes for the Windows XP Operating System*
- *Avid Xpress DV Release Notes for Mac OS X*
- *Avid Xpress DV Getting Started Guide*

- *Avid Xpress DV User's Guide*
- *Avid Xpress DV Quick Reference for the Windows XP Operating System*
- *Avid Xpress DV Quick Reference for Mac OS X*
- *Avid Xpress DV Effects Guide*
- *Avid Color Correction User's Guide*
- *Avid Xpress DV Online Publications*

  This online collection provides electronic versions of most documents listed in this section, as well as documents for related Avid applications. You can view these documents with Adobe® Acrobat® Reader®, which you can install from the CD-ROM.

- Avid Xpress DV Help

  The Help system provides all the information included in the *Avid Xpress DV User's Guide,* the *Avid Xpress DV Effects Guide*, and the *Avid Color Correction User's Guide* supplied with your system. It also includes supplemental information not in the manuals. The Help operates in a Web browser. To open the Help, choose Avid Xpress DV Help from the Help menu in the Avid Xpress DV application. For information on using Help, click the Using Help button in the Help system.

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Appendix A

Using AudioSuite Plug-Ins

The following topics describe how to access and use the AudioSuite plug-ins, including the set of core plug-ins that comes with your Avid system. They also provide a list of other plug-ins that are supported.

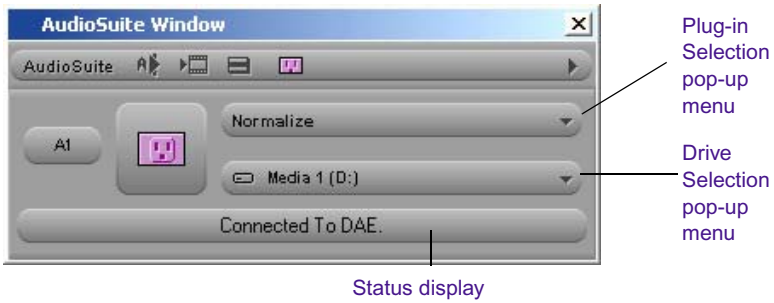
For details on installing the plug-ins, see “Digidesign AudioSuite Plug-Ins” in the *Avid Xpress DV User’s Guide* or the Help.

Accessing the AudioSuite Plug-Ins

To access the plug-ins:

- Choose AudioSuite from the Tools menu.

  The AudioSuite window opens.



Core AudioSuite Plug-Ins

The following basic plug-ins are installed automatically as part of the Avid system software installation:

- Compressor — Reduces the dynamic range of signals that exceed a selected threshold by a specific amount.
- Limiter — Prevents signal peaks from exceeding a chosen level so that they don't overload amplifiers or recording devices.
- Expander-Gate — Performs the same function as the Gate plug-in with the addition of expander features. Expanders are particularly useful for reducing noise or signal leakage that creeps into recorded material as the signal level falls, which often occurs with headphone leakage.
- Gate — Reduces noise by decreasing the gain of signals that fall below a user-selectable threshold.
- EQ — Allows you to adjust frequency equalization on individual audio clips.
- Invert — Inverts the polarity (phase of the audio file).
- Duplicate — Creates a new master clip from a selected audio clip. The plug-in uses the IN and OUT points on the selected clip to define the boundaries of the new clip.
- Mod Delay — Provides time-delay-based effects. Effects obtained through the use of Mod Delay include slap echo, doubling, chorusing, and flanging.

- Normalize — Finds the peak value in the source audio file and scales the entire file proportionally to that maximum value.
- Gain — Same as Normalize, but allows positive or negative gain adjustment.
- Reverse — Rewrites the selected audio in reverse.
- DC Offset Removal — Removes an audio artifact that is common in digital audio files. A DC offset is caused by poorly calibrated analog-to-digital converters (A/Ds), and can produce clicks and pops on clip edit transitions if not removed.
- Signal Generator — Produces audio test tones in a variety of frequencies, waveforms, and amplitudes.
- Time Compression Expansion — Allows you to adjust the duration of a selected clip by creating a new master clip. This increases or decreases the selection's length without changing pitch.
- Pitch Shift — Changes pitch with or without changing length.

For a brief overview of each plug-in and, where appropriate, a description of how to use the plug-in, see "Description of Core AudioSuite Plug-Ins" on page 22.

Additional Supported Plug-Ins

The following AudioSuite plug-ins can be purchased separately and have been qualified for this release:

- Broadband Noise Reduction (BNR)
- Focusrite d3
- Maxim
- Digidesign D-Fi
- Digidesign D-fx

These plug-ins come with their own documentation. For more information, see the following Web site:

www.digidesign.com

Broadband Noise Reduction (BNR)

The BNR feature of the Digidesign Intelligent Noise Reduction™ (DINR™) plug-in provides broadband and narrow-band noise reduction for suppressing unwanted elements such as tape hiss, air conditioning rumble, and microphone preamplifier noise.

Focusrite d3

Focusrite® d3 is a high-quality, dynamics processor plug-in that contains a compressor and a limiter. The d3 compressor reduces the dynamic range of audio signals that exceed a user-selectable threshold by a specific amount. The d3 does this by reducing output levels when input levels increase above the threshold.

The d3 limiter operates as a fast-attack compressor with a high compression ratio. Like the compressor, the limiter is activated when the signal exceeds a user-selectable threshold. The limiter then compresses any signal above the selected threshold to the lower threshold limit that you have set.

There are two versions of the plug-in:

- *ff d3 Mono,* which operates on channels (tracks) separately.
- *ff d3 Stereo,* which operates on a composite of the two channels of the stereo signal. It prevents image shift when signal levels differ between the two channels.

Maxim

The Maxim™ plug-in performs peak limiting and sound maximizing. Maxim takes advantage of the random-access nature of disk-based recording to anticipate peaks in audio material and to preserve their

transient attacks when performing reduction. The Maxim plug-in helps preserve the character of the original audio signal without clipping peaks or introducing distortion.

Digidesign D-Fi

The set of D-Fi™ plug-ins provides analog synthesizer effects:

- *Lo-Fi*™ adds noise generation, bit-rate reduction, distortion, and saturation to sound.
- *Sci-Fi*™ adds analog synthesizer-type ring modulation, frequency modulation, and variable frequency resonator.
- *Recti-Fi*™ generates new harmonics and subharmonics through waveform rectification.
- *Vari-Fi*™ adds tape and turntable “start up” and “slow down” effects.

Digidesign D-fx

The set of D-fx™ plug-ins contains a selected group of basic effects:

- Chorus
- D-Verb™
- Flanger
- Multi-Tap Delay
- Ping-Pong Delay

The D-Fi and D-fx plug-ins come with their own documentation. For more information, see the following Web site:

www.digidesign.com

Description of Core AudioSuite Plug-Ins

The following sections give a brief overview of each plug-in and, where appropriate, describe how to use the plug-in.

Compressor

The Compressor plug-in reduces the dynamic range of signals that exceed a selected threshold by a specific amount. The increase of input signal needed to cause a 1-dB increase in the output signal of the compressor is called the compression ratio. With a ratio of 4:1, for example, an 8-dB increase of input produces a 2-dB increase in the output.

Audio material often varies in loudness, and can be above the threshold at one moment and below it the next. The Attack slider sets the Compressor's response time, or attack. The Release slider sets the amount of time that it takes for the Compressor's gain to return to its original level.

Using Compression Effectively

To use compression most effectively, the attack time should be set so that signals exceed the threshold level long enough to cause an increase in the average level. This helps to ensure that gain reduction doesn't decrease the overall volume.

Release times should be set long enough so that if signal levels repeatedly rise above the threshold, they cause gain reduction only once. If the release time is too long, a loud section of the audio material could cause gain reduction that persists through a soft section. Of course, compression has many creative uses that break these rules.

The Compressor has built-in metering that allows you to monitor the amount of gain reduction taking place. The Gain Reduction meter usually remains at 0-dB level when the input signal is below the threshold, and falls to the left to show the amount of gain reduction in decibels when the input signal exceeds the threshold.

Compressor Parameters

Table 1 lists the Compressor plug-in parameters.

Table 1 Compressor Parameters

Parameter	Description
Input Meter	Indicates the level of the unprocessed input signal to the Compressor.
Output Meter	Indicates the output level of the Compressor, including any gain compensation added through the Gain parameter
Reduction	Indicates the amount of gain reduction in dB.
Phase Invert	Allows you to invert the phase (polarity) of the input signal in order to change frequency response between “multi-miked” sources or to correct for miswired microphone cables.
Gain	Provides overall output gain adjustment. It allows you to compensate for heavily compressed signals.
Threshold	Allows you to set the threshold level. Signals that exceed this level are compressed. Signals that are below it are unaffected. A level setting of 0 dB is equivalent to no compression. Unlike scales on analog compressors, metering scales on a digital device reflect a 0-dB value, which indicates full scale (FS) — the full-code signal level. There is no headroom above 0 dB.
Ratio	Allows you to set the compression ratio. The range is based on decibels above the threshold. If this parameter is set to 2:1, for example, it compresses changes in signals above the threshold by one half.
Attack	Allows you to set the Compressor’s attack time. The smaller the value, the faster the attack. The faster the attack, the faster the Compressor applies attenuation to the signal. If you use fast attack times and heavy limiting, you should use a proportionally longer release time, particularly with material that contains many peaks in close proximity.

Table 1 Compressor Parameters (Continued)

Parameter	Description
Release	Allows you to control how long it takes for the Compressor to be fully deactivated after the input signal drops below the threshold level. If you use heavy compression, you should use proportionally longer release times. This prevents pumping, which might occur when the Compressor is forced to jump back and forth between compressed and uncompressed signal levels. Lengthening the release time helps smooth these changes in level by introducing a lag in the ramp-up and ramp-down times of attenuation. Use shorter release times on material with few peaks that do not occur in close proximity to each other.
Knee	Allows you to set the rate at which the compressor reaches full compression once the threshold has been exceeded. This parameter ranges from 0 (hardest response) to 200 (softest response).
Graph	Displays the response curve set by the Compressor's Threshold, Ratio, and Knee settings. As you adjust these parameters, refer to the graph to see how the shape of this curve changes. It allows you to see the effect of your settings.
External Key	This parameter has no effect on the AudioSuite plug-ins.
Key Listen	This parameter has no effect on the AudioSuite plug-ins.

Limiter

The Limiter plug-in is used to prevent signal peaks from exceeding a chosen level so that they don't overload amplifiers or recording devices. Most limiters have ratios of 10:1 or 20:1, although some provide ratios of up to 100:1. Large ratios effectively limit the dynamic range of the signal to a specific value by setting an absolute ceiling for the dynamic range.

Limiting is used to prevent short-term peaks from reaching their full amplitude. Used carefully, limiting allows you to achieve higher average levels while avoiding overload (clipping or distortion) by limiting some short-term transients in the source audio. To prevent the ear from hearing the gain changes, use extremely short attack and release times.

Limiting is used to remove occasional peaks because gain reduction on successive peaks wouldn't be noticeable. If audio material contains many peaks, the threshold should be raised and the gain manually reduced so that only occasional, extreme peaks are limited.

The Limiter's ratio is internally set to 100:1 and the attack time is automatically set to 0 milliseconds. The Limiter is similar to heavy compression. It can be useful for reducing pops and clicks, or for hard-limiting dynamic range for broadcast or band-limited media such as a cassette.

Limiter Parameters

Table 2 lists the Limiter plug-in parameters.

Table 2 Limiter Parameters

Parameter	Description
Input Meter	Indicates the level of the unprocessed input signal to the Limiter.
Output Meter	Indicates the output level of the Limiter, including any gain compensation added through the Gain parameter.
Reduction	Indicates the amount by which the signal is being attenuated.
Phase Invert	Allows you to invert the phase (polarity) of the input signal in order to change frequency response between "multi-miked" sources or to correct for miswired microphone cables.
Gain	Provides overall output Gain adjustment.
Threshold	Allows you to set the threshold level. Signals that exceed this level are limited. Signals that are below it are unaffected.
Attack	Allows you to set the Limiter's attack time. The smaller the value, the faster the attack. The faster the attack, the faster the Limiter applies attenuation to the signal. If you use fast attack times and heavy limiting, you should use a proportionally longer release time, particularly with material that contains many peaks in close proximity.

Table 2 Limiter Parameters (Continued)

Parameter	Description
Release	Allows you to control how long it takes for the Limiter to be fully deactivated after the input signal drops below the threshold level. If you use heavy limiting, you should use proportionally longer release times.This prevents pumping, which can occur when the Limiter is forced to jump back and forth between limited and unlimited signal levels. Lengthening the release time helps smooth these changes in level by introducing a lag in the ramp-up and ramp-down times of attenuation. Use shorter release times on material with few peaks that do not occur in close proximity to each other.
Graph	Displays the response curve set by the Limiter's Threshold setting. As you adjust this parameter, refer to the graph to see how the shape of this curve changes. It allows you to see the effect of your settings.
External Key	This parameter has no effect on the AudioSuite plug-ins.
Key Listen	This parameter has no effect on the AudioSuite plug-ins.

Expander-Gate

The Expander-Gate plug-in reduces noise by decreasing the gain of signals that fall below a user-selectable threshold. Expanders are particularly useful for reducing noise or signal leakage that creeps into recorded material as its level falls, which often occurs with headphone leakage.

Expanders can be thought of as soft-noise gates because they provide a gentler way of cutting off noisy low-level signals than the typically abrupt cutoff of a gate. If you want, however, you can use this plug-in as a gate by setting the Ratio to its maximum value and using short Attack, Decay, and Hold settings.

Expander-Gate Parameters

Table 3 lists the Expander-Gate plug-in parameters.

Table 3 Expander-Gate Parameters

Parameter	Description
Phase Invert	Allows you to invert the phase (polarity) of the input signal in order to change frequency response between “multi-miked” sources or to correct for miswired microphone cables.
Reduction Meter	Indicates the amount of signal reduction in dB.
Threshold	Allows you to set the threshold level. Signals that fall below the threshold are reduced in gain. Signals that are above it are unaffected. (When you adjust the Threshold slider, be sure that audio material is playing through the Expander-Gate to see changes reflected in the Reduction meter.)
Ratio	Allows you to set the amount of expansion. If this parameter is set to 2:1, for example, it lowers signals below the threshold by one half. At higher ratio levels (30:1 or 40:1, for example) the Expander-Gate functions as a gate by reducing lower level signals dramatically. As you adjust the Ratio parameter, refer to the built-in graph to see how the shape of the expansion curve changes.
Attack	Allows you to set the Expander’s attack time. This parameter determines how quickly a signal’s level is reduced once it falls below the threshold. This setting, along with the Ratio setting, allows you to control the softness of the Expander’s gain reduction curve.
Hold	Allows you to specify a duration (in seconds or milliseconds) that the Expander-Gate stays open after the initial attack cycle. This parameter can be used as a one-time function to keep the Expander-Gate open for longer periods of time with a single crossing of the threshold. It can also be used to prevent gate chatter, which might occur if varying input levels near the threshold cause the Gate to open and close very rapidly.
Decay	Allows you to control how long it takes for the Gate to close after the input signal falls below the threshold level and the hold time has passed.
Range	Sets the depth of the Gate when closed. This parameter has a maximum depth of –80 dB. Setting the Gate to higher range levels allows more of the gated audio that falls below the threshold to peek through the Gate at all times.

Table 3 Expander-Gate Parameters (Continued)

Parameter	Description
Key HPF	This parameter has no effect on the AudioSuite plug-ins.
Key LPF	This parameter has no effect on the AudioSuite plug-ins.
Graph	Displays the response curve set by the Expander-Gate's Threshold, Ratio, and Range settings. As you adjust these parameters, refer to the graph to see how the shape of this curve changes. It allows you to see the effect of your settings.
External Key	This parameter has no effect on the AudioSuite plug-ins.
Key Listen	This parameter has no effect on the AudioSuite plug-ins.

Gate

The Gate plug-in reduces noise by decreasing the gain of signals that fall below a user-selectable threshold.

Gate Parameters

Table 4 lists the Gate plug-in parameters.

Table 4 Gate Parameters

Parameter	Description
Phase Invert	Allows you to invert the phase (polarity) of the input signal to change frequency response between "multi-miked" sources or to correct for miswired microphone cables.
Gating (Reduction Meter)	Indicates the amount of reduction in dB.

Table 4 Gate Parameters (Continued)

Parameter	Description
Threshold	Allows you to set the threshold level. Signals that exceed this level pass through. Signals that are below it are gated, depending on the settings of the Attack, Hold, Decay, and Range parameters.
Attack	Allows you to set the attack time of the Gate.
Hold	Allows you to specify a duration (in seconds or milliseconds) that the Gate stays open after the initial attack cycle. This parameter can be used as a one-time function to keep the Gate open for longer periods of time with a single crossing of the threshold. It can also be used to prevent gate chatter, which might occur if varying input levels near the threshold cause the Gate to open and close very rapidly.
Decay	Allows you to control how long it takes for the Gate to close after the signal falls below the threshold level.
Range	Sets the depth of the Gate when closed. This parameter has a maximum depth of –80 dB. Setting the Gate to higher range levels allows more of the gated audio that falls below the threshold to peek through the gate at all times. This is useful for problems such as drum leakage, where you might want to suppress the overall drum kit sound by a specific amount while emphasizing the gated instrument such as a snare.
Graph	Displays the response curve set by the Gate's Threshold and Range settings. As you adjust these parameters, refer to the graph to see how the shape of this curve changes. It allows you to see the effect of your settings.
External Key	This parameter has no effect on the AudioSuite plug-ins.
Key Listen	This parameter has no effect on the AudioSuite plug-ins.

EQ

There are two EQ plug-ins:

- 1-Band EQ II
- 4-Band EQ II

The EQ II plug-ins provide an enhanced “British EQ” sound that is favored by audio engineers and producers.

EQ II Parameters

Table 5 lists the EQ II plug-in parameters.

Table 5 EQ II Parameters

Parameter	Description
Input	Allows you to control the input gain of the EQ to prevent the possibility of clipping.
Phase Invert	Allows you to invert the phase (polarity) of the input signal in order to change frequency response between “multi-miked” sources (a common technique for “miking” a guitar amplifier), or to correct for miswired microphone cables.
Type	Allows you to select an EQ type (High-Pass, Low-Shelf, Peak, High-Shelf or Low-Pass).
Gain	Allows you to control the amount that the selected frequencies are cut or boosted (for Peak, High-Shelf, and Low-Shelf only).
Freq	Allows you to designate the center of the frequency region to be cut or boosted.
Q	(Peak only) Allows you to set the bandwidth of the Peak filter. Higher values represent narrower bandwidths. Lower values represent wider bandwidths.
Bypass	Bypasses the EQ. The 4-Band EQ II has individual Bypass buttons for each band (black buttons with EQ curve icons).
High-Pass	Attenuates all frequencies below the selected cutoff frequency setting at a rate of 12 dB per octave while allowing all others above the frequency to pass through. For this reason, no gain control is available for this filter. High-pass filters can be useful for removing low-frequency rumble or for thinning out the lower end of a sound for special effects, such as a “telephone simulation” effect.
Low-Shelf	Produces a lift or a cut below the specified frequency.

Table 5 EQ II Parameters (Continued)

Parameter	Description
Peak	Boosts or cuts only those frequencies around the selected center frequency. The Q button sets the bandwidth of the Peak filter, which determines the width of the filter's overall slope — from a broad "bell" shape to a narrow notch. Broad curves tend to be most useful for musical applications. Narrow curves are useful for special-purpose processing such as hum removal. Higher values represent narrower bandwidths. Lower values represent wider bandwidths.
High-Shelf	Produces a lift or a cut at the specified frequency and above it.
Low-Pass	Attenuates all frequencies above the selected cutoff frequency setting at a rate of 12 dB per octave while allowing all others below the frequency to pass through. For this reason, no gain control is available for this filter.

Invert

The Invert plug-in reverses the polarity of the selected audio. All positive sample amplitude values are made negative, and all negative amplitudes are made positive. This process is useful for permanently altering the phase (polarity) relationship of tracks. Inverting can be useful when mixing because it alters frequency response between source tracks recorded with multiple microphones and also allows you to correct for audio that was recorded out of phase.

Duplicate

The Duplicate plug-in creates a new master clip from a selected audio master clip. The plug-in uses the IN and OUT points on the selected clip to define the boundaries of the new clip. This plug-in applies only if you are using the Create New Master Clips features of the AudioSuite plug-ins.

Mod Delay

The Mod Delay plug-ins provide time-delay-based effects. Effects obtained through the use of Mod Delay include slap echo, doubling, chorusing, and flanging.

There are four Mod Delays, each of which is capable of a different maximum delay time:

- *Short Delay* provides 1024 samples of delay (23.2 ms at 44.1 kHz or 21.3 ms at 48 kHz).
- *Slap Delay* provides 7186 samples of delay (162 ms at 44.1 kHz or 149 ms at 48 kHz).
- *Medium Delay* provides 16384 samples of delay (371 ms at 44.1 kHz or 341 ms at 48 kHz).
- *Long Delay* provides 162474 samples of delay (3.68 seconds at 44.1 kHz or 3.38 seconds at 48 kHz).

Mod Delay Parameters

Table 6 lists the Mod Delay plug-in parameters.

Table 6 Mod Delay Parameters

Parameter	Description
Input	Allows you to control the input volume of the delay to prevent clipping.
Wet/Dry	Allows you to control the balance between the delayed signal and the original signal. If you are using a delay for flanging or chorusing, you can control the depth of the effect somewhat with the Wet/Dry setting.
LPF (Low-Pass Filter)	Controls the cutoff frequency of the low-pass filter. This parameter allows you to attenuate the high-frequency content of the feedback signal. The lower the setting, the more high frequencies are attenuated.
Delay	Allows you to set the delay time between the original signal and the delayed signal.

Table 6 Mod Delay Parameters (Continued)

Parameter	Description
Depth	Allows you to control the depth of the modulation applied to the delayed signal.
Rate	Allows you to control the rate of modulation of the delayed signal.
Feedback	Allows you to control the amount of feedback applied from the output of the delay back into its input. It also controls the number of repetitions of the delayed signal. Negative Feedback settings give a more intense “tunnel-like” sound to flanging effects.

Normalize

In cases where a sound file has been recorded with too little amplitude, the Normalize plug-in ensures that the inherent dynamics of the performance remain unchanged while the overall volume level of the passage is raised.

In addition to the standard AudioSuite parameters, the Max Peak At controls let you specify how close to maximum level (the clipping threshold) the peak level of your selection or file is boosted. You can enter this information in one of three ways:

- Enter a numeric decibel value below the clipping threshold.
- Enter a percentage of the threshold.
- Adjust the on-screen slider.

Editing any of these controls automatically calculates the equivalent value in the others.

To configure the Normalize parameters:

1. Type the amount of boost you want applied during the Normalize process.
2. Set a specific decibel amount below maximum by double-clicking and typing that value in the Max Peak at: (dB) text box.
3. Set the amount of normalization as a percentage of maximum by typing the percentage you want in the Max Peak at: (%) text box.

4. (Option) Manually set the amount of normalization by doing one of the following:
   - Click and adjust the Max Peak slider.
   - Press and hold the Ctrl key (Windows) or the ⌘ key (Macintosh) before you drag the slider to fine-adjust.

Gain

Gain allows you to boost or lower amplitudes in a file or selection by a specified amount. The Change Gain command is ideal for smoothing out undesirable peaks and other dynamic inconsistencies.

To configure the Gain parameters, do one of the following:

- Enter the new level as a decibel amount (dB) or percentage (%) by double-clicking in the respective text box and typing a new value.
- Use the slider to adjust the gain manually; press and hold the Ctrl key (Windows) or the ⌘ key (Macintosh) before you drag the slider to fine-adjust.

Reverse

Reversed sounds are useful effects in many music and film and video projects. The Reverse plug-in lets you perform this type of processing very easily.

DC Offset Removal

The DC Offset Removal plug-in removes DC offset from your audio files. The term “DC offset” describes a specific type of audio artifact that might appear in digital audio signals.

The DC Offset plug-in can be identified in a waveform overview because it appears to have a near-vertical fade-in with a constant or “steady-state” offset from zero when the file is actually “silent” (it contains no audible audio). The DC Offset plug-in can help remove (or at least reduce) the DC offset from your source audio files.

Signal Generator

The Signal Generator plug-in produces audio test tones in a variety of frequencies, waveforms, and amplitudes. The plug-in has the following options:

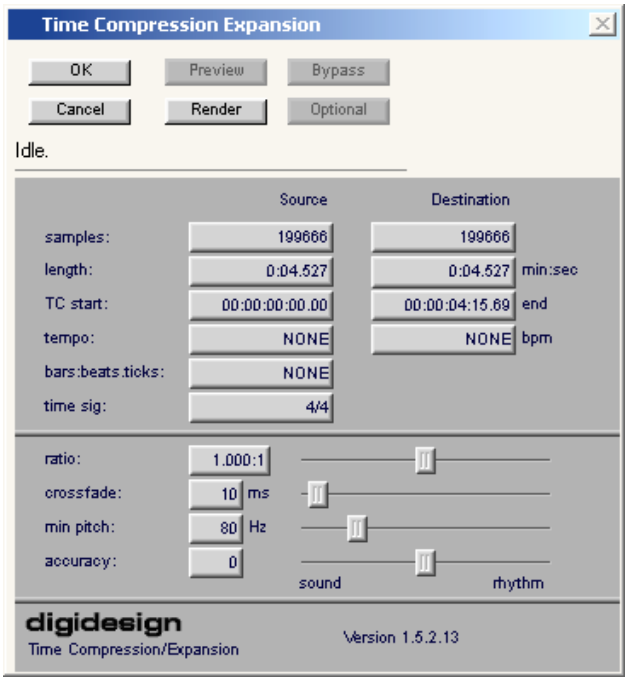
- **Frequency:** This option sets the frequency of the signal in hertz. Values range from a low of 20 Hz to a high of 20 kHz.
- **Level:** This option sets the amplitude of the signal in decibels. Values range from a low of –95 dB to a high of 0.0 dB.
- **Signal:** These buttons allow you to select the waveform. The waveform choices are sine, square, sawtooth, triangle, white noise, and pink noise.

The Signal Generator produces a tone as soon as it is inserted on a track. To mute the tone, click the Bypass button.

Time Compression Expansion

The Time Compression Expansion plug-in allows you to adjust the duration of any selected regions by increasing or decreasing the selection's length without changing pitch. This function is particularly important in audio postproduction applications because it allows you to adjust sounds to specific time lengths or timecode durations for synchronization.

To change duration (length) and pitch simultaneously, use the Pitch Shift plug-in.



Master Clip Mode Parallel Processing

The Time Compression Expansion plug-in allows two tracks to be time-compressed or expanded as a “stereo pair,” so that the two sides of the stereo signal are processed relative to each other.

The Time Compression Expansion plug-in has special parameters that let you enter time compression or expansion values in different formats. They are located in the Source and Destination columns, and also include the Ratio slider. Additional controls for fine-tuning the compression and expansion process are also included.

To use the special control features:

- Press and hold the Ctrl key (Windows) or the ⌘ key (Macintosh) to engage slider fine-tune mode.
- Alt+click (Windows) or the ⌘ key (Macintosh) a field or slider to reset its default value.

Time Compression Expansion Parameters

Table 7 lists the Time Compression Expansion plug-in parameters.

Table 7 Time Compression Expansion Parameters

Parameter	Description
Source and Destination	The Source text boxes display the length of the current selection before processing in each of the listed formats. All the text boxes in both columns are constantly active, and a change made to one value is immediately reflected in the values displayed in the other text boxes. The text boxes in the Destination column display and control the length of the selection after processing using the current settings. You can enter the length of the Destination file by double-clicking the appropriate text box in the Destination column. Type the number of samples in min:secs:msec format or type timecode values as start and end locations. All the Destination text boxes are constantly updated, and a change made to one value is immediately reflected in the values displayed in the other text boxes. You can also enter a new tempo, bars:beats:ticks length, or time signature for regions that have tempo or Bars & Beats settings. This can be any region associated with a MIDI Metronome value (such as an overdub recorded to a MIDI click) or regions that have been processed with the Pro Tools Identify Beat command. The Ratio slider lets you set the destination length in relation to the source length. Dragging the slider to the right increases the length of the destination file, and dragging the slider to the left decreases its length. The controls below the bar line allow you to fine-tune the time compression and expansion process. They include the Crossfade, Min Pitch, and Accuracy sliders.

Table 7 Time Compression Expansion Parameters (Continued)

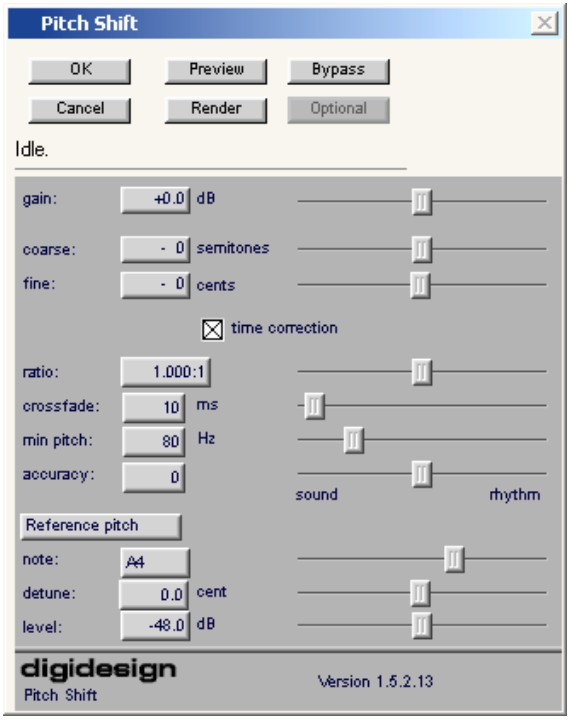
Parameter	Description
Crossfade	The Crossfade slider allows you to manually adjust the crossfade length in milliseconds to optimize performance of the Time Compression Expansion plug-in according to the type of audio material you are processing. The Time Compression Expansion plug-in achieves length modification by replicating or subtracting very small portions of audio material and very quickly crossfading between these alterations in the waveform of the audio material. Crossfade length essentially affects the amount of smoothing performed on audio material to prevent audio artifacts such as clicks. In general, small narrow-range time (length) changes require longer crossfades while larger changes in length require shorter crossfades. The disadvantage of long crossfade times is that they smooth the signal, including any transients. While this can be desirable for audio material such as vocals, it is not appropriate for material with sharp transients such as drums or percussion. The default setting for this parameter is Auto (leftmost position), in which crossfade times are set automatically according to the percentage of change in length for the current process. This setting should be sufficient for most applications; however, you can use this slider to manually adjust and optimize crossfade times, if necessary. For audio material with sharper attack transients, use shorter crossfade times. For audio material with softer attack transients, use longer crossfade times with a range in values of 1 to 200 ms.
Min Pitch	The Min Pitch slider lets you select the minimum (lowest) pitch that is used in the plug-in's calculations during the time compression and expansion process. The slider has a range of 40 Hz to 1000 Hz. By controlling the minimum pitch, you can focus the time compression and expansion process for maximum efficiency — it all depends on the audio's spectral shape. This slider should be set lower when you process bass guitar or another instrument with a similarly low range. Set the min pitch higher when processing instruments such as snare drums, violins, and other higher range instruments and sounds. Experiment with combinations of the other fine-tune controls in relation to the Min Pitch slider.

Table 7 Time Compression Expansion Parameters (Continued)

Parameter	Description
Accuracy	Use the Accuracy slider to prioritize the processing resources allocated to audio quality (sound) or timing (rhythm). Dragging the slider toward sound generally results in better sonic quality and fewer audio artifacts. Dragging the slider toward rhythm puts the emphasis on keeping the tempo consistent. When working with loops, listen carefully and adjust accuracy until you find the setting that keeps timing solid within the region. Start and end times are precise, but the perception of beats might be “shuffled” if the Accuracy slider’s rhythm setting is too low. **The smallest time ratio allowed for time compression and expansion is 0.25. The largest time ratio allowed is 4.0.** *Normalizing a selection before applying the Time Compression Expansion plug-in can sometimes produce better-sounding results.*

Pitch Shift

The Pitch Shift plug-in allows you to adjust the pitch of any source audio file with or without a change in its duration. This powerful function allows sounds to be transposed a maximum of a full octave up or down in pitch with or without altering playback speed.



Edit the Pitch Shift parameters by double-clicking and typing in any Destination text box or by dragging a slider to adjust. All Pitch Shift plug-in controls are linked, so that changing one changes the others.

Pitch Shift Parameters

Table 8 lists the Pitch Shift plug-in parameters.

Table 8 Pitch Shift Parameters

Parameter	Description
Gain	The Gain controls set the input level, in tenths of a decibel. The input level should be set so that the plug-in can adequately handle amplitude peaks in the selection. Dragging the slider to the right increases gain, and dragging the slider to the left decreases gain.

Table 8 Pitch Shift Parameters (Continued)

Parameter	Description
Coarse and Fine	Adjust the pitch by dragging either of the two faders, or by typing values in the Coarse and Fine text boxes. The Coarse slider transposes in semitones (half steps); the Fine slider transposes in cents (hundredths of a semitone).
Time Correction	Clicking the Time Correction check box allows you to enable or disable time correction. ⚠ **You can deselect the Time Correction check box if you are using the Create New Master Clips feature of the AudioSuite plug-ins. The Time Correction check box must be selected, however, when you are applying AudioSuite plug-ins to audio clips in the Timeline.** If the Time Correction check box is deselected, it has the effect of "permanently varispeeding" your audio file. Like working with tape, the file's duration is compressed or extended according to the settings of the Coarse and Fine controls. Playback speed increases proportionally as the sound file is transposed up in pitch and decreases proportionally as it is transposed down in pitch, just like a tape recorder that is varispeeding. Consider that altering a file in this way has little detrimental effect on the fidelity of audio files, whereas time correction can affect fidelity in a pronounced way.
Ratio	The Ratio slider lets you set the amount of transposition (pitch change). Dragging the slider to the right raises the pitch of the processed file, and dragging the slider to the left decreases its pitch. Press and hold the Ctrl key (Windows) or the ⌘ key (Macintosh) when you drag the slider to fine-adjust. For a description of the Crossfade, Min Pitch, and Accuracy sliders, see Table 7 on page 37.

Table 8 Pitch Shift Parameters (Continued)

Parameter	Description
Reference Pitch	The Reference Pitch feature generates a sine wave tone that you can adjust to match a selected portion of audio material, and then use as an audible reference when pitch-shifting other audio material in your session. **To use the Reference Pitch feature:** 1. Select the audio material you want to use as a pitch reference. Click the Preview button to begin playback of the selected audio. 2. Click the Reference Pitch button to activate the reference sine wave tone. 3. Adjust the note and detune settings to match the reference tone to the pitch of the audio playback. Adjust the level setting to change the relative volume of the reference tone. It might also be helpful to switch the Reference Pitch on and off to compare pitch. 4. Select the audio material to be pitch shifted. Adjust the Coarse and Fine controls to match the pitch of the audio playback to the reference pitch.

Appendix B

File Format Specifications

To be compatible with a variety of imaging standards, your Avid Xpress DV system accommodates many file types and formats. For import and export procedures, see “Importing Files” and “Exporting and Exchanging Material” in the *Avid Xpress DV User’s Guide* or the Help. These sections contain descriptions, specifications, and notes for importing and exporting specific file formats.

To ensure usability and high quality, the files in some formats require preparation before being imported to the Avid Xpress DV application. Consequently, these sections contain many more notes for import than for export. When you export a file, you choose a file format from the Export Settings dialog box and select options appropriate to the format. For descriptions of the Export Settings dialog box options, see Table 50 in the *Avid Xpress DV User’s Guid*e or “Creating a New Export Setting” in the Help.

Graphic (Image) Files

Avid Xpress DV uses Image Independence® to produce usable files from a large number of graphic formats. Once you have imported a format, you can export it, with the exception of Photo CD™ (Macintosh only); you cannot export a file to a Photo CD.

The following list briefly describes the supported graphic (image) file formats:

- **Alias™:** Alias PIX image format, developed by Alias Research, Inc. (now Alias|Wavefront, a division of Silicon Graphics Limited) for use with their animation and visualization software.
- **BMP:** Developed by Microsoft Corporation as the standard image file format used by Microsoft® Windows.
- **Chyron®:** Developed by Chyron Corporation for use with video frame buffers of Chyron character-generator titles.
- **Cineon™:** Developed by Eastman Kodak for use in the Cineon Digital Film System. It is a subset of the SMPTE DPX (Digital Picture Exchange) format.
- **Framestore:** Developed by NewTek Incorporated for use with its Video Toaster system.
- **IFF:** Developed by Electronic Arts. IFF (Interchange File Format), or more specifically IFF-ILBM (InterLeaved BitMap), is the standard file format by which applications on the Amiga® platform transfer image files.
- **JPEG:** Developed by the Joint Photographic Experts Group (JPEG). This format is highly suited for image storage and transmission purposes because of its ability to dramatically reduce the storage requirements for a file. JFIF files (JPEG File Interchange Format, the standard for constructing JPEG files) can also be imported and exported.
- **OMFI (import only):** Developed by Avid Technology, Inc. and many industry and standards partners for the interchange of digital media data between platforms and applications.
- **PCX:** Developed by Zsoft Corporation for use with its PC PaintBrush™ paint software.
- **(Macintosh only) Photo CD (import only):** Developed by Kodak for use with the Kodak Photo CD storage medium. You cannot import this format directly into Avid Xpress DV. However, you can open the file in an application such as Photoshop® and use the Save As feature to save the file in a format that can be imported, such as TARGA, PICT, or TIFF.

- **Photoshop:** Developed by Adobe Systems Incorporated for use with its Adobe Photoshop image-editing software.
- **PICT:** Developed by Apple Computer, Inc. as the format for Macintosh QuickDraw® images.
- **Pixar®:** Developed by Pixar for stored pictures.
- **PNG:** Developed by the PNG Development Group originally as an alternative to the GIFSM image format. PNG is an acronym for Portable Network Graphics and is pronounced “ping.”
- **QRT:** Developed on the Amiga personal computer to run on several operating systems. This format is used by many ray tracing programs, such as DKB Ray Trace and the QRT ray tracer.
- **Rendition:** Developed by Numerical Design Ltd.
- **SGI™:** Developed by Silicon Graphics, Inc. for use as the standard format on their line of workstations.
- **Softimage®:** Developed by Softimage, Inc. (a division of Avid Technology, Inc.) for use in their Softimage software.
- **Sun Raster™:** Developed by Sun Microsystems, Inc. and supported mainly in Sun applications.
- **TARGA®:** Developed by Truevision, Inc. (now Pinnacle Systems) and originally intended for support of the Truevision image-capturing hardware.
- **TIFF:** Developed by Aldus Corporation (now Adobe Systems Incorporated) and Microsoft Corporation. TIFF is an acronym for Tag Image File Format.
- **Wavefront™:** Developed by Wavefront Technologies, Inc. (now Alias|Wavefront, a division of Silicon Graphics Limited) for storing pictures in a machine-independent manner.
- **XWindows:** Developed by the MIT X Consortium and supported by many X Window System™ applications on workstations and some personal computers.
- **YUV:** Defined by Abekas Video Systems (now Accom, Inc.), the YUV format is the raw data sent to the Abekas® machines.

Preparing Graphic Files for Import

Before you import a graphic file to Avid Xpress DV, you can use third-party image-editing software, such as Adobe Photoshop, to make adjustments such as the following:

- Convert the file to the appropriate size, resolution, and bit depth.
- Crop or color-correct an image.
- Eliminate jagged edges in an image using the image-editing application's anti-aliasing or high-quality option.
- Add transparency (to some formats) by setting the resolution to 32 bits per pixel to add an alpha channel.
- In some cases, you can convert an image file that does not support an alpha channel to a format that does, in order to add transparency.

You can import and key the image over video using key effects within the Avid Xpress DV application. However, importing an image with an existing alpha channel provides the best results.

For specific procedures and file formats, see the documentation that accompanies the image-editing software.

Graphic File Import Specifications

Table 9 contains graphic file import specifications. The table uses the following terms:

- **Full-screen image size:** These numbers describe the recommended width and height, in pixels, to create a source image that is displayed full-screen after import. Using these dimensions helps minimize distortion after conversion to the Avid application native resolution of 720 x 480 non-square pixels for NTSC or 720 x 576 for PAL. An image with smaller dimensions takes up less of the screen or is distorted, while an image that exceeds these dimensions might appear distorted. Avid recommends an image resolution of 72 pixels per inch.
- **Bit depth:** These numbers refer to color-depth resolution of the image based on the number of bits per pixel. For example, 2-bit images are displayed in black and white; 8-bit images are displayed in 256 colors;

16-bit images are displayed in thousands of colors; 24-bit images are displayed in millions of colors; and 32-bit images are displayed in millions of colors with an alpha channel.

- **Alpha channel:** This column states whether or not alpha channel import is supported. An alpha channel determines regions of transparency in the picture when it is keyed over a background.
- **NA:** This notation means Not Applicable.

Table 9 Graphic File Import Specifications

Format	Default File Name Extension	Recommended Full-Screen Size (Pixels)	Bit Depth Support	Alpha Channel Support	Notes
Alias	.als	720 x 480 NTSC 720 x 576 PAL	24-bit color, 8-bit grayscale	No	
BMP	.bmp	720 x 480 NTSC 720 x 576 PAL	1-, 4-, 8-, and 24-bit	No	Dots-per-inch (dpi) information is preserved. Four-bit BMP files saved with run-length-encoded compression are not supported. Photoshop does not support four-channel BMP files.
Chyron	.chr	720 x 480 NTSC 720 x 576 PAL	32-bit	Yes	
Cineon	.cin	720 x 480 NTSC 720 x 576 PAL	10-bit (logarithmic)	NA	Dots-per-inch (dpi) information is preserved.

Table 9 Graphic File Import Specifications (Continued)

Format	Default File Name Exten-sion	Recommended Full-Screen Size (Pixels)	Bit Depth Support	Alpha Channel Support	Notes
Framestore	.fs	720 x 480 NTSC 720 x 576 PAL	24-bit	No	Pixel aspect information is saved with image data. When importing files generated from Video Toaster, select the option Force to Fit Screen.
IFF	.iff	720 x 480 NTSC 720 x 576 PAL	1-bit through 24-bit color; 1-bit through 8-bit grayscale; 64-color EHB; 4096-color HAM; 262,144-color HAM8; SHAM; A-HAM; A-RES	1-bit alpha only	Dots-per-inch (dpi) information is preserved. Pixel aspect information is saved with image data.
JPEG	.jpg	720 x 480 NTSC 720 x 576 PAL	24-bit color, 8-bit grayscale	No	
OMFI	.omf	720 x 480 NTSC 720 x 576 PAL			See "OMFI Files" on page 57.
PCX	.pcx	720 x 480 NTSC 720 x 576 PAL	Color-mapped and 24-bit color	NA	Dots-per-inch (dpi) information is preserved. PCX files with 1-bit color depth or odd-numbered pixel widths are not supported.

Table 9 Graphic File Import Specifications (Continued)

Format	Default File Name Exten-sion	Recommended Full-Screen Size (Pixels)	Bit Depth Support	Alpha Channel Support	Notes
Photo CD (Macintosh only)		720 x 486 NTSC 720 x 576 PAL		NA	If you are importing Photo CD files, you must install QuickTime® software and a compatible QuickTime Photo CD driver. Most Photo CD files are high resolution; if the photo has a portrait orientation, the image is automatically rotated upon import. Use a paint or image processing program to crop or resize the image before importing.
Photoshop	.psd	720 x 480 NTSC 720 x 576 PAL	Grayscale, indexed color, RGB, and duotone variations	No	Duotone files are loaded as grayscale. Multichannel (more than four channels) files are not supported.
PICT	.pic	720 x 480 NTSC 720 x 576 PAL	2-, 4-, 8-, 16-, and 32-bit	Yes	Dots-per-inch (dpi) information is preserved. If no dpi is specified, 72 dpi is used.
Pixar	.pxr	720 x 480 NTSC 720 x 576 PAL	24-bit, 36-bit	Yes	
PNG	.png	720 x 480 NTSC 720 x 576 PAL	1-bit through 32-bit	Yes	

Table 9 Graphic File Import Specifications (Continued)

Format	Default File Name Extension	Recommended Full-Screen Size (Pixels)	Bit Depth Support	Alpha Channel Support	Notes
QRT	.dbw	720 x 480 NTSC 720 x 576 PAL	24-bit	No	
Rendition	.6rn	720 x 480 NTSC 720 x 576 PAL	32-bit	Yes	
SGI	.rgb	720 x 480 NTSC 720 x 576 PAL	8-bit or 16-bit grayscale; 8-bit grayscale plus 8-bit alpha channel; 24- and 48-bit color; 24-bit color plus 8-bit alpha channel; 64-bit (16 bits per component)	Yes	
Softimage	.pic	720 x 480 NTSC 720 x 576 PAL	24-bit plus 8-bit alpha	Yes	Pixel aspect information is saved with the image. ⚠ **(Windows only) Double-clicking a Softimage file starts the application associated with PICT files because they use the same extension. Avoid double-clicking Softimage files to view them.**
Sun Raster	.sun	720 x 480 NTSC 720 x 576 PAL	1-, 8-, or 24-bit	No	

Table 9 Graphic File Import Specifications (Continued)

Format	Default File Name Extension	Recommended Full-Screen Size (Pixels)	Bit Depth Support	Alpha Channel Support	Notes
TARGA	.tga	720 x 480 NTSC 720 x 576 PAL	8-, 15-, 16-, or 24-bit; 32-bit	Yes	
TIFF	.tif	720 x 480 NTSC 720 x 576 PAL	8-bit color-mapped; 8-bit or 16-bit grayscale; 24- and 48-bit color; 24-bit color plus 8-bit alpha; 36-bit color plus 12-bit alpha; 42-bit color plus 14-bit alpha; 48-bit color plus 16-bit alpha	Yes	Dots-per-inch (dpi) information is preserved. The following types of files are not supported: • Multichannel (greater than four channels) files • Group 3-compressed (fax) files • CMYK files with extra channels • JPEG-compressed files. Four-channel files from Avid Matador™ are imported as three-channel files.
Wavefront	.rla	720 x 480 NTSC 720 x 576 PAL	32-bit and 64-bit	Yes	
XWindows	.xwd	720 x 480 NTSC 720 x 576 PAL	1-, 2-, 4-, 8-, 16, 24-, and 32-bit	No	

Table 9 Graphic File Import Specifications (Continued)

Format	Default File Name Extension	Recommended Full-Screen Size (Pixels)	Bit Depth Support	Alpha Channel Support	Notes
YUV	.yuv	720 x 480 NTSC 720 x 576 PAL	24-bit	No	Pixel aspect information (based on the video format) is saved with image data. When importing, select the option Force to Fit Screen.

Animation Files

Avid Xpress DV supports the following animation file formats:

- **(Macintosh only) PICS:** Developed by Apple Computer, Inc. A PICS file is a sequence of PICT images. Many applications that handle multiple image formats on the Macintosh platform also support PICS files.
- **QuickTime:** Developed by Apple Computer, Inc. for multimedia on multiple platforms.
- **(Windows only) AVI (Audio Video Interleave):** Developed by Microsoft for storing video and audio information as part of its Video for Windows standard.
- **ERIMovie:** Developed by Elastic Reality, Inc. (now a division of Avid Technology, Inc.) for quick playback of rendered movies on Silicon Graphics, Inc. platforms.

Table 10 lists animation file import specifications. AVI (Windows only) and QuickTime import and export information appears in Table 11 on page 54.

Avid Xpress DV uses a 29.97-fps frame rate (25-fps for PAL). Set the appropriate frame rate for the project when you export from a third-party application.

Table 10 Animation File Import Specifications

Format	Default File Name Extension	Bit Depth Support	Alpha Channel Support	Notes
ERIMovie	.mov or .eri	24-bit packed and 32-bit raw movie files	Yes	QuickTime for Windows also uses the .mov extension. However, QuickTime does not support ERIMovie, and double-clicking an ERIMovie file causes an error. *There is no player for ERIMovie on Windows or Macintosh platforms; the* `mview` *program supports ERIMovie on Silicon Graphics systems.*
PICS Animation	.pcs	2-, 4-, 8-, 16-, and 32-bit	Yes	Only uncompressed data can be stored in PICS format. PICS export does not allow PICS containers larger than 16 MB.
Sequenced image files	Various		Yes	Name each file in the sequence *NameN.ext*, with *Name* identifying the animation, *N* indicating the file order, and *.ext* indicating the file type (for example, Image1.PIC, Image2.PIC, Image3.PIC). The numbering can start at any number except 0 or use any numbering format (for example, Image010.PIC, Image012.PIC, or Imagef28.PIC, Imagef29.PIC).

The information in Table 11 applies to using QuickTime files with Avid Xpress DV.

Table 11 QuickTime File Import and Export Specifications

QuickTime File Import Specifications	Notes
QuickTime files	QuickTime import and export requires QuickTime software. For supported versions of QuickTime, see the release notes for your Avid system.
Avid files for QuickTime	Use the Avid Codec for QuickTime for importing QuickTime files into an Avid system when you export from Avid Xpress DV or a third-party application. To use the codec in a third-party application, see "Using Avid Codecs" in the *Avid Xpress User's Guide* or the Help.
Resolution	Use Export settings to specify the compression ratio of a QuickTime file for export. For more information, see Table 45 in the *Avid Xpress DV User's Guide* or the Help. The resolution of a QuickTime file is set at export time from a third-party application equipped with the Avid Codec for QuickTime. Avid Xpress DV imports the file at this resolution. For more information on exporting from a third-party application, see "Using Avid Codecs" in the *Avid Xpress DV User's Guide* or the Help.
Image Size	To import to Avid Xpress DV: **Two-field resolutions** 720 x 480 pixels for NTSC images (non-square pixels) 720 x 576 pixels for PAL images (non-square pixels) **Single-field resolutions** 352 x 243 pixels for NTSC images (non-square pixels) 352 x 288 pixels for PAL images (non-square pixels)
File name extension	After you import a QuickTime file, the file maintains the .mov file name extension, which is visible in a bin. The .mov file name extension is the default for export.

Table 11 QuickTime File Import and Export Specifications (Continued)

QuickTime File Import Specifications	Notes
QuickTime alpha	To save a QuickTime movie with alpha channel in a third-party QuickTime application, use the Avid Codec for QuickTime or a codec that supports a color depth of “millions+.” The Avid Xpress DV application does not support matte key or alpha channel for QuickTime export; it does import alpha channel when one exists.

The information in Table 12 applies to using AVI files with Avid Xpress DV.

Table 12 AVI File Import and Export Specifications (Windows Only)

AVI File Import and Export Specifications	Notes
Avid Codec for AVI	You can import and export Avid AVI files using standard AVI conversion or using the Avid Codec for AVI. Use the Avid Codec for AVI for importing AVI files into an Avid system when you export from Avid Xpress DV or a third-party application. Files created by the codec are readable within applications also equipped with the codec. For more information on using the codec and making it available to Avid AVI-compatible applications, see “Using the Avid Codec for AVI (Windows Only)” in the *Avid Xpress DV User’s Guide* or the Help.
Resolution	Use Export settings to specify the compression ratio of an AVI file for export. For more information, see “Using Avid Codecs” in the *Avid Xpress DV User’s Guide* or the Help. The resolution of an AVI file is set at export time from a third-party application equipped with the Avid Codec for AVI. For more information on exporting from a third-party application, see 'Using Avid Codecs” in the *Avid Xpress DV User’s Guide* or the Help.

Table 12 AVI File Import and Export Specifications (Windows Only) (Continued)

AVI File Import and Export Specifications	Notes
File size	Avid AVI files can be quite large, especially at high video resolutions. They require adequate storage and transfer capabilities.
File name extension	After you import an AVI file, the file maintains the .avi file name extension, which is visible in a bin. The .avi file name extension is the default for export.
AVI alpha	Avid Xpress DV does not support alpha channel for AVI import or export.

Audio File Formats

The following list briefly describes the supported audio file formats:

- **Audio Interchange File Format (AIFF-C):** Format for audio files developed by Apple Computer, Inc.
- **(Macintosh only) Sound Designer II (SD2):** Native format of the Sound Designer II application developed by Digidesign, Inc., a division of Avid Technology, Inc.
- **WAVE Format (WAV):** Format for audio files developed jointly by Microsoft and IBM®. WAV files are playable by nearly all Windows applications that support sound.

You can record, render, and edit audio in SD2 (Macintosh only), AIFF-C, or WAV file formats.

OMFI Files

OMF Interchange® (OMFI) was developed by Avid Technology, Inc. and many industry and standards partners for the interchange of digital media data between platforms and applications. For information about creating an OMFI file on a non-Avid application, see the documentation for the application.

The information in Table 13 applies to importing OMFI files.

Table 13 OMFI File Import Specifications

OMFI File Import Specifications	Notes
Resolution	For optimum import speed and quality, export or render the file from the source application at the resolution you want, and then import the file into the Avid Xpress DV application at that resolution. To do this, click Options in the Select Files to Import dialog box, and then select Use Source from the OMFI Resolution area of the Import Settings dialog box. The system disregards the resolution setting in the Select Files to Import dialog box and automatically imports at the file's existing resolution.
Frame or Edit rate	You must import sequences and clips to projects that have the same edit rate (29.97 fps for NTSC, 25 fps for PAL). If the edit rates do not match, you receive an error message. *Avid Xpress DV cannot import an OMFI audio file that was produced with an edit rate equal to the audio sample rate. Trying to import such a file results in the error message* `Unrecognized file type`*. Create the source file with an edit rate at the project edit rate, most likely 29.97.*

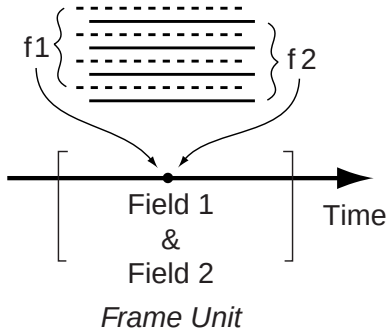
Table 13 OMFI File Import Specifications (Continued)

OMFI File Import Specifications	Notes
OMFI version	Avid Xpress DV recognizes and supports OMFI 1.0 composition and media files and OMFI 2.0 composition files. The following OMFI 2.0 effects are supported generally: • Video effects: dissolves, wipes, freeze frame, film pulldown, slow motion, fade to black • Audio effects: pan and volume, audio dissolves Other effects can be imported from other Avid applications.
Audio sample rate	Audio media is imported at the sample rate that is set on the Avid Xpress DV system. *Avid Xpress DV cannot import an OMFI audio file that was produced with an edit rate equal to the audio sample rate. Trying to import such a file results in the error message* `Unrecognized file type`*. Set the edit rate to the project edit rate, most likely 29.97.*
Avid MCXpress™ for Windows NT files	If you are importing OMFI compositions from Avid MCXpress for Windows NT®, you might receive an error if the sequence includes video or audio effects. If this happens, create a cuts-only version of the sequence in Avid MCXpress and export it again. You cannot import video media from Avid MCXpress for Windows NT; if you import a composition, you must rerecord the media.
File transfer	If you are transferring an OMFI file over a network, transfer it as a binary file.
Reimporting Avid media files	If you import OMFI files containing media that you exported from the same Avid Xpress DV system, you need to delete the original media. Otherwise, the new media does not overwrite the original media. To learn how to locate the original media for a sequence, see “Relinking Media Files” in the *Avid Xpress DV User’s Guide* or the Help.

Field Ordering in Graphic Imports and Exports

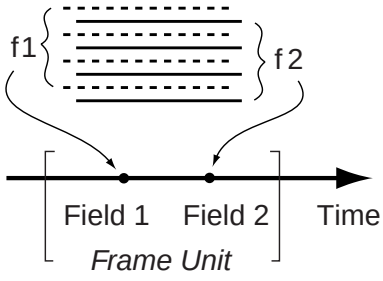
Graphic images are composed of one or more image files, each of which contains a full frame. These frames contain fields (formed from the odd-numbered and even-numbered lines of the image frame) that have three basic arrangements:

- **Progressive or still frame:** The upper and lower fields in the frame originated at the same instant of time, or are coherent with each other, as shown in the following illustration.

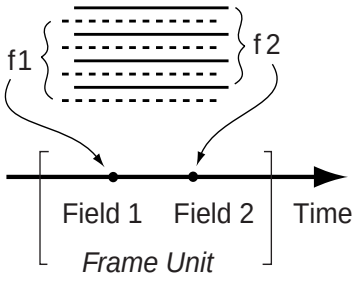


Dashed lines = field 1
Solid lines = field 2

- **Upper field is first:** The upper field in the frame (odd-numbered lines, when the frame lines are numbered starting from 1) occurs temporally before the lower field, as shown in the following illustration. This arrangement can be termed “upper field first” (or “lower field second”).



- **Lower field is first:** The lower field in the frame (even-numbered lines) occurs temporally first, as shown in the following illustration. This arrangement is termed “lower field first” (or “upper field second”).



Preventing a Spatial Field Mismatch on Import

Table 14 shows the proper spatial field position for each of the common video formats in Avid systems.

Table 14 Recommended Field Settings for Two-Field Import and Export

Avid Video Format	Import/Export Frame Size	Upper/Lower Field Spatial Setting	Field Setting for Import and Export[a]
AVR NTSC	720 x 243 x 2	Upper field is first.	Odd Field
AVR PAL	720 x 288 x 2	Upper field is first.	Odd Field
Meridien™ NTSC	720 x 243 x 2	Lower field is first.	Even Field
Meridien PAL	720 x 288 x 2	Upper field is first.	Odd Field

a. Odd Field or Even Field specifies whether the temporally first field in the frame has the odd-numbered or even-numbered lines, starting from 1.

Graphics utilities, such as Adobe After Effects®, permit selection of either spatial relation for the fields when rendering a sequence of interlaced fields. If the rendering is performed as shown in Table 14 on page 60, then the import is correct.

If the spatial positions of the two fields are reversed (for example, the upper field should be a lower field), the import cannot be done without correcting the spatial relationship. In this spatial mismatch situation, the Avid system converts the upper field to a lower field by deleting the top line of the upper field and replicating the bottom line. The field is thus converted to a lower field relative to the other field. The import operation can now proceed.

Spatial Field Relationship on Export

The default export operation is automatically carried out as shown in Table 14 on page 60. The fields are properly interleaved in the export frames (one frame per file).

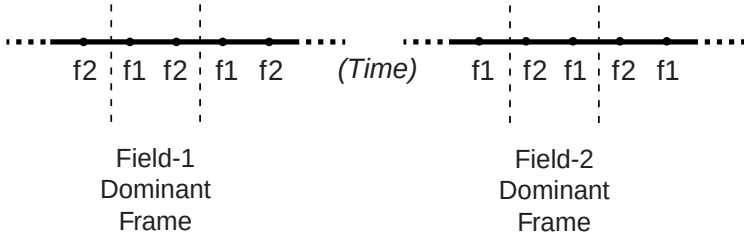
If an import comes in mismatched and the dropping of the top line and repeating of the bottom line is performed, you might choose to have the export operation performed to prevent a shift up or down by a line. The Export Settings dialog box permits you to select the spatial arrangement that is the opposite of what is otherwise recommended. This option should rarely be used.

24p and 25p Import and Export

The spatial field selection options do not apply for 24p and 25p projects because the frames in these projects are already in progressive or still-image form.

Field Dominance

Editing in Avid systems is frame based. All timecode is expressed in frame numbers, and all cuts are at frame boundaries. A raw video stream has no concept of frames (ignoring color framing) until the frame unit is defined. Defining the *dominant field* for the system defines the ***"frameness"*** of the video stream, as shown in the following figure.



Avid editing systems all use field 1 as the dominant field. This means that the first field temporally in the edit frame is always field 1. Field 2 is always the second frame in the edit frame. Cuts always precede field 1.

Fields in Video

In the video signal, fields have a temporal position that is unambiguously and uniquely tied to the details of the video signal, regardless of whether the signal is analog or digital (SDI). This means that working around a field spatial mismatch should be done by correcting the spatial relation between the two fields rather than the temporal position. In some cases, it is possible to modify the field dominance of the input image files, but this is cumbersome, results in the loss of two fields, and is more difficult to carry out than either the workaround provided in Avid systems or rerendering properly to the other spatial relationship.

Appendix C

Avid Log Specifications

This section explains the Avid log file format. The Avid Xpress DV application can import logs that meet Avid log specifications. These logs must follow the formatting requirements described here.

Log Formats

Log formats with the file name extension .ale can be imported directly into the Avid Xpress DV application. You can use Avid Log Exchange to adapt other log formats so that they meet Avid log specifications.

Understanding Avid Log Specifications

This section contains tables that show how to enter headings and data to create an Avid log. The tables use the following conventions:

- <A supported value> is surrounded by angle brackets. <Alternative supported values> appear underneath, also in angle brackets. You must enter exactly one of these values. For example, **<29.97>** is one of the supported values for the FPS heading; to specify that value, type **`29.97`**.
- <A variable data value> is also surrounded by angle brackets. For example, **<time code>** is the data entry for the Start heading; type the correct timecode, in the format **`08:19:10:00`** (or **`08;19;10;00`**, for drop-frame timecode).
- [Tab] and [Enter] (Windows) or [Return] (Macintosh) keys are surrounded by brackets.
- The fifth column contains the word "Required" if the heading must be included in the log.
- The final column contains notes about the heading or values.

The following is a sample heading from the format table:

FPS	[Tab]	<25>			
		<29.97>	[Enter] (Windows) or [Return] (Macintosh)	Required	Capture rate is 25 fps for PAL and 29.97 fps for NTSC video.

FPS is a required heading.

To make a log entry for the FPS heading:

1. Type **FPS**.
2. Press the Tab key.
3. Type one of the supported values (**`25`** or **`29.97`**).
4. Press Enter (Windows) or Return (Macintosh).

Describing an Avid Log File

An Avid log is composed of three or four sections, in this order:

- Global headings
- Standard column headings
- Custom column headings (optional)
- Data headings

The tables in this section adhere to this order. When you create an Avid log, you must follow the order precisely.

You might choose not to display a defined heading (including a required heading), except for *Name*. *Name* must always be displayed.

The maximum number of combined global, standard, and custom headings in a log file is 64.

Global Headings

The global headings must come first in an Avid log file, and you must enter one value for each heading.

Table 15 shows the format for the global headings and the supported values for each heading.

Table 15 Avid Log Global Headings

GLOBAL HEADINGS: Global headings are case sensitive and must be spelled exactly as shown. Include all required headings. Other headings are optional but might be necessary for your project. The maximum number of combined global, standard, and custom headings in a log file is 64.					
Heading			[Enter] (Windows) or [Return] (Macintosh)	Required	This marks the start of the global headings.
FIELD_DELIM	[Tab]	<TABS>	[Enter] (Windows) or [Return] (Macintosh)	Required	Enter TABS to show that the file is Tab delimited.
VIDEO_FORMAT	[Tab]	<NTSC>			
		<PAL>	[Enter] (Windows) or [Return] (Macintosh)	Required	
AUDIO_FORMAT	[Tab]	<22 kHz> <24 kHz> <44.1 kHz> <48 kHz>	[Enter] (Windows) or [Return] (Macintosh)		Audio sample rate for recording. You can override this for individual clips.
TAPE	[Tab]	<Tape Name>	[Enter] (Windows) or [Return] (Macintosh)	Required	Name of the videotape reel you are logging. If you omit this heading, the file name becomes the global tape name. You can override this for individual clips.

Table 15 Avid Log Global Headings (Continued)

FPS	[Tab]	<25> <29.97>	[Enter] (Windows) or [Return] (Macintosh)	Required	Capture rate is 25 fps for PAL and 29.97 fps for NTSC video.
			[Enter] (Windows) or [Return] (Macintosh)		Press Enter (Windows) or Return (Macintosh) a second time after entering the FPS value. This marks the end of the global headings.

Column Headings

The standard column headings come after the global headings in the Avid log file.

You do not enter the data for a column heading along with the heading. You enter the data later, in a separate data section.

You must include the five required standard column headings; they are listed in the top five rows of Table 16.

You can create your own custom column headings. Enter them after the standard headings (see the last heading in Table 16). To create a custom heading, substitute the custom heading name for <Your_heading>. You can create several custom headings, as long as the total number of global, standard, and custom headings does not exceed 64.

Table 16 Avid Log Column Headings

COLUMN HEADINGS: Column headings are case sensitive and must be spelled exactly as shown. Note that the first five headings are required. Other headings are optional but might be necessary for your project. The maximum number of combined global, standard, and custom headings in a log file is 64.			
Column	[Enter] (Windows) or [Return] (Macintosh)	Required	Indicates the start of the column headings.
Name	[Tab]	Required	Heading for clip name.
Tracks	[Tab]	Required	Heading for tracks you select for recording.
Start	[Tab]	Required	Heading for video timecode of sync point — the timecode IN for clip (from address track of video).
End	[Tab]	Required	Heading for timecode OUT for clip (from address track of video).
AUDIO_FORMAT	[Tab]		Heading for audio sample rate for recording the individual clip. If omitted, the global entry for AUDIO_FORMAT applies.
Color	[Tab]		Heading for color.
Creation Date	[Tab]		Heading for date of clip creation.
Disk	[Tab]		Heading for target disk ID.
Duration	[Tab]		Heading for timecode Start to timecode End, the length of the video clip.
IN-OUT	[Tab]		Heading for duration between clip's IN point and OUT point (if present).
Mark IN	[Tab]		Heading for timecode of clip's IN point (if present).

Table 16 Avid Log Column Headings (Continued)

Mark OUT	[Tab]		Heading for timecode of clip's OUT point (if present).
Offline	[Tab]		Heading for tracks currently without recorded media files online.
Tape	[Tab]		Heading for source tape ID for the individual clip. If omitted, the global entry applies.
Video	[Tab]		Heading for video resolution.
COMMENTS	[Tab]		Heading for comments about clip.
<Your_heading>	[Tab]		Press the Tab key between each heading. Do not press the Tab key after the last heading. Add any category of information you want. Add as many headings as you want, but do not use more than a total of 64 global and column headings in the file.
	[Enter] (Windows) or [Return] (Macintosh)	[Enter] (Windows) or [Return] (Macintosh)	Press Enter (Windows) or Return (Macintosh) twice (not Tab) after the last heading.

Data Headings

Some data, such as Creation Date, is gathered by the system. Table 17 does not include entries for such data.

The data headings come after the Custom column headings. Table 17 shows the format for entering data. Enter a line of data in this format for every clip. Be sure to start the data section *for each clip* with the word **Data** [Enter] (Windows) or [Return] (Macintosh).

You must enter data so that it aligns with its column heading. For example, the data that goes with the ninth column heading must be the ninth data entry.

Be sure to enter data for all the required values. To leave a data position unfilled, press the Tab key instead of typing data. Press Enter (Windows) or Return (Macintosh) at the end of each line.

Table 17 Avid Log Data Headings

DATA HEADINGS: The word Data marks the start of the data for each clip.			
Data	[Enter] (Windows) or [Return] (Macintosh)	Required	Enter the word Data to mark the start of the logged clip entries.
DATA FOR EACH CLIP: Enter a line of data for each clip. Enter the data so that it aligns with its column heading. (The data that goes with the ninth column heading must be the ninth data entry.) Be sure to enter data for all the required values. To leave a data position unfilled, press the Tab key instead of typing data. Press [Enter] (Windows) or [Return] (Macintosh) at the end of each line. Note that Avid Xpress DV supports up to four audio tracks in imported and exported logs.			
<clip name>	[Tab]	Required	Under **Name** heading. Enter a clip identifier (32 characters maximum).
<V> <VA1> <VA2> <VA1A2>			
<A1A2> <A1> <A2>	[Tab]	Required	Under **Tracks** heading. Enter the tracks you want recorded for the clip. Enter V for MOS takes. Enter A1, A2, or A1A2 for wild sound.
<32 kHz> <44.1 kHz> <48 kHz>	[Tab]		Under **AUDIO_FORMAT** heading. Enter the audio sample rate for this clip only. If omitted, global entry applies.

Table 17 Avid Log Data Headings (Continued)

<Source tape ID>	[Tab]		Under **Tape** heading. Enter the source videotape ID for this clip only.
<time code>	[Tab]	Required	Under **Start** heading. Enter the video timecode for sync point, the first frame in clip. Use colons for non-drop-frame (for example, 01:00:12:20). Use one or more semicolons for drop-frame (for example, 01;18;00;02).
<time code>	[Tab]	Required	Under **End** heading. Enter the video timecode for the last frame of the clip.
<time code>	[Tab]		Under **Duration** heading. Enter the length of the video clip, Start to End.
	[Enter] (Windows) or [Return] (Macintosh)		Press Enter (Windows) or Return (Macintosh) (not Tab) after the last entry for the clip.
Enter an additional line of data for each remaining clip.			

Sample Avid Log

This section contains a sample Avid log for an NTSC video project. Formatting keys, such as [Tab] and [Enter] (Windows) or [Return] (Macintosh), are shown in brackets.

Heading [Enter] (Windows) or [Return] (Macintosh)

FIELD_DELIM [Tab] TABS [Enter] (Windows) or [Return] (Macintosh)

VIDEO_FORMAT [Tab] NTSC [Enter] (Windows) or [Return] (Macintosh)

AUDIO_FORMAT [Tab] 44.1 kHz [Enter] (Windows) or [Return] (Macintosh)

TAPE [Tab] 001 [Enter] (Windows) or [Return] (Macintosh)

[Enter] (Windows) or [Return] (Macintosh)

Column [Enter] (Windows) or [Return] (Macintosh)

Name [Tab] Tracks [Tab] Start [Tab] End [Tab]

[Enter] (Windows) or [Return] (Macintosh)

Data [Enter] (Windows) or [Return] (Macintosh)

CU Josh & Mary [Tab] V [Tab] 01:00:00:00 [Tab] 01:15:05:00 [Enter] (Windows) or [Return] (Macintosh)

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